


APRIL 2022
EMA 406SW
ADVANCED STUDY OF TEACHING BASIC
SCHOOL MATHEMATICS
1 HOUR 30 MINUTES

Candidate's Index Number
IE/MAT/KRR/19/10103
Signature: 

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

FIVE-SEMESTER BACHELOR OF EDUCATION (SANDWICH) PROGRAMME
LEVEL 400, END-OF FIRST SEMESTER EXAMINATION, APRIL 2022

APRIL 26, 2022 ADVANCED STUDY OF TEACHING BASIC 2:30 PM - 4:00 PM
SCHOOL MATHEMATICS

SECTION B
[40 MARKS]

Answer any TWO questions from this Section. Each question carries 20 marks.

1.
 - a. Describe the activities you would engage JHS form 2 students in to guide them deduce the formula for calculating the area of a circle as $A = \pi r^2$.
[Assume that they know that the circumference of a circle is given by $C = 2\pi r$] [10 Marks]
 - b. Explain how you would use Dienes multi-base blocks to guide JHS pupils to convert 89 to a base five numeral. [10 Marks]

2.
 - a. As a prospective mathematics teacher, explain the two approaches possible for the selection of problems and for instruction in problem solving. [4 marks]
 - b. Outline two useful activities that you would engineer to help your students develop a good memory for problems. [4 marks]
 - c. Explain the nature of problem solving with respect to Piaget's developmental stages. [8 marks]
 - d. Outline two implications of the developmental stages of Piaget in problem solving. [4 marks]

- 3.
- a. Explain what is meant by *classroom questioning* in mathematics education. [2 marks]
 - b. Explain **four** reasons why certain types of questions need to be avoided in the mathematics classroom. [8 marks]
 - c. Outline **two** strategies for improving classroom questioning. [4 marks]
 - d. Explain the **two** major types of motivation in mathematics education. [6 marks]
4. Explain the *Constructivist Theory of Learning* focusing on discussing [6 marks]
- a. What it is;
 - b. **Two** roles of the mathematics teacher in the teaching and learning environment; [4 marks]
 - c. **Two** roles of the learner in the teaching and learning environment; [4 marks]
 - d. The common misconception that people hold about it. [3 marks]
 - e. **Three** methods employed in their classroom. [3 marks]